Revolutionizing healthcare: the role of artificial intelligence in clinical practice

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Abstract

Introduction Healthcare systems are complex and challenging for all stakeholders, but artificial intelligence (AI) has transformed various fields, including healthcare, with the potential to improve patient care and quality of life. Rapid AI advancements can revolutionize healthcare by integrating it into clinical practice. Reporting AI's role in clinical practice is crucial for successful implementation by equipping healthcare providers with essential knowledge and tools. Research Significance This review article provides a comprehensive and up-to-date overview of the current state of AI in clinical practice, including its potential applications in disease diagnosis, treatment recommendations, and patient engagement. It also discusses the associated challenges, covering ethical and legal considerations and the need for human expertise. By doing so, it enhances understanding of AI's significance in healthcare and supports healthcare organizations in effectively adopting AI technologies. Materials and Methods The current investigation analyzed the use of AI in the healthcare system with a comprehensive review of relevant indexed literature, such as PubMed/Medline, Scopus, and EMBASE, with no time constraints but limited to articles published in English. The focused question explores the impact of applying AI in healthcare settings and the potential outcomes of this application. Results Integrating AI into healthcare holds excellent potential for improving disease diagnosis, treatment selection, and clinical laboratory testing. AI tools can leverage large datasets and identify patterns to surpass human performance in several healthcare aspects. AI offers increased accuracy, reduced costs, and time savings while minimizing human errors. It can revolutionize personalized medicine, optimize medication dosages, enhance population health management, establish guidelines, provide virtual health assistants, support mental health care, improve patient education, and influence patient-physician trust. Conclusion AI can be used to diagnose diseases, develop personalized treatment plans, and assist clinicians with decision-making. Rather than simply automating tasks, AI is about developing technologies that can enhance patient care across healthcare settings. However, challenges related to data privacy, bias, and the need for human expertise must be addressed for the responsible and effective implementation of AI in healthcare.